

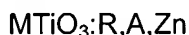
IN THE SPECIFICATION:

The specification as amended below with replacement paragraphs shows added text with underlining and deleted text with ~~strikethrough~~.

[0012] The foregoing and other objects of the present invention are achieved by providing a low-voltage excited red phosphor comprising a matrix including an oxide of an ~~alkali~~ alkaline earth metal and titanium and doping elements including a rare-earth element, a group 13 element, and Zn.

[0013] The foregoing and other objects of the present invention may also be achieved by providing a method of preparing the low-voltage excited red phosphor comprising mixing a salt of an ~~alkali~~ alkaline earth metal and titanium oxide to obtain a mixture; adding a rare-earth element-containing compound, a group 13 element-containing compound, and Zn-containing compound to the mixture; and firing the mixture at a temperature in the range of 1100-1400°C.

[0016] The low-voltage excited red phosphor according to an embodiment of the present invention comprises a matrix including an oxide of an ~~alkali~~ alkaline earth metal and titanium and doping elements including a rare-earth element, a group 13 element, and Zn. The phosphor has the following composition formula:



wherein M is an ~~alkali~~ alkaline earth metal, and preferably at least one metal selected from the group consisting of Mg, Sr, Ca, Ba, or a combination thereof; R is a rare-earth element, and preferably at least one element selected from the group consisting of Ce, Eu, Tb, Er, Tm, Pr, Dy, Gd, or a combination thereof; and A is a group 13 element, preferably at least one element selected from the group consisting of Al, Ga, In, Tl, or a combination thereof, and more preferably Al or Ga.

[0020] For preparation of the low-voltage excited red phosphor, a salt of an ~~alkali~~ alkaline earth metal and titanium oxide are mixed to obtain a mixture. The salt of the ~~alkali~~ alkaline earth metal and the titanium oxide are mixed in a mole ratio of 0.7-1: 1. When the mole ratio is within the above range, brightness of the phosphor is not deteriorated. Examples of ~~alkali~~ alkaline earth metal salts used in the present invention include carbonate or nitrate.

[0039] As described above, the red phosphor of the present invention has an enhanced lifetime

AS
Curt because of doping elements including a rare-earth element, a group 13 element, and Zn in a matrix including an oxide of an alkali alkaline earth metal and titanium.
